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SOA Infrastructure





Objectives

- At the end of this session you should have a good understanding of:
 - The benefits of an SOA infrastructure
 - How to connect disparate systems
 - How to manage and monitor an SOA

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Contents

- SOAP and transports in real life
- Gateways
- Enterprise Service Bus
- Management of Web Services

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Transports



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What transport should you use?

- The options:
 - HTTP
 - JMS
 - TCP
 - SMTP

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JMS

- Pros:
 - Maybe an existing message bus
 - Good management available
 - e.g Monitor queue depth, integration with Management Console
 - Built in reliability
- Cons:
 - No standard as yet for binding SOAP to JMS
 - Text or Binary? WSDL? Headers?
 - Support for SOAP/JMS is therefore “patchy”
 - Best deployed in a consistent environment rather than a fully interoperable mixed environment
 - Complex management based on JNDI and no uniform locations
 - Doesn’t work well across network boundaries

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HTTP

- Pros:
 - Universal support in every SOAP stack and every major integration product
 - Highly scalable protocol
 - Uniform locations – every endpoint is available to every other on the network
- Cons:
 - HTTP isn't the most efficient protocol
 - But HTTP/1.1 did a lot to improve things
 - Little unified management for HTTP
 - A side effect of universal implementation!

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TCP

- There are bindings into TCP, for example SOAP/TCP
- Pros:
 - Faster than HTTP
 - Less overhead
- Cons:
 - No standard

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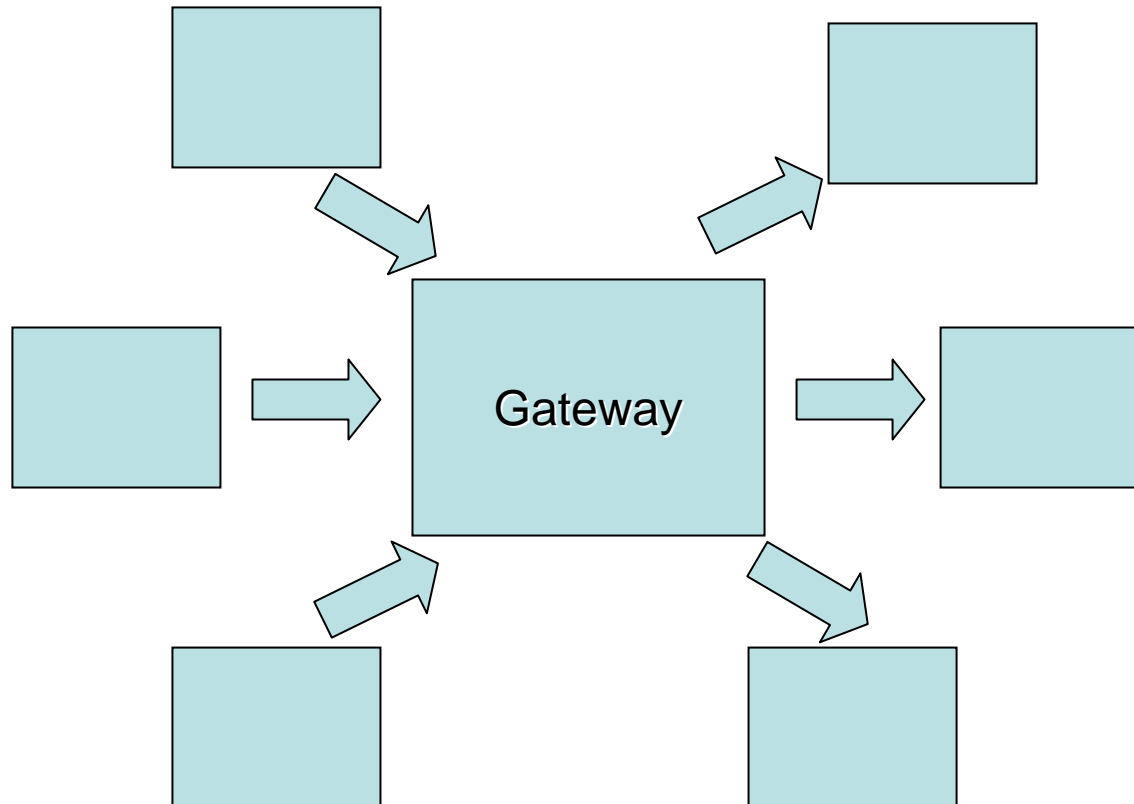


SMTP

- There is a standard binding of SOAP into SMTP
- However, in real life there may be problems
 - Spam filters and virus blockers may modify the message
 - Or kill it completely
- However SMTP is massively scalable
- Organizations already have networks and systems built to handle it
- Asynchronous nature is good for a loose coupled approach

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XML Gateways



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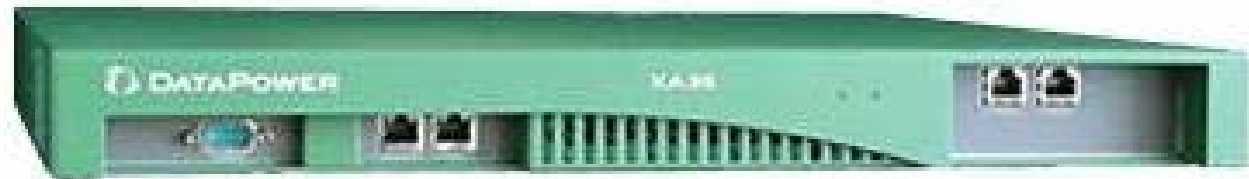
Gateway model

- Intercept/Intermediate
- Provide:
 - Monitoring
 - Management
 - Logging / Trace
 - Authorization
 - XML validation
 - Routing
 - Transformation

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Hardware XML Gateways

- Custom appliances
- Typically contain custom hardware for:
 - Encryption
 - XML Parsing
- Very high performance
 - For example WS Security at 10x Software speeds
 - XSLT at wire speed (100Mb/s -> 1Gbs)



Enterprise Service Bus



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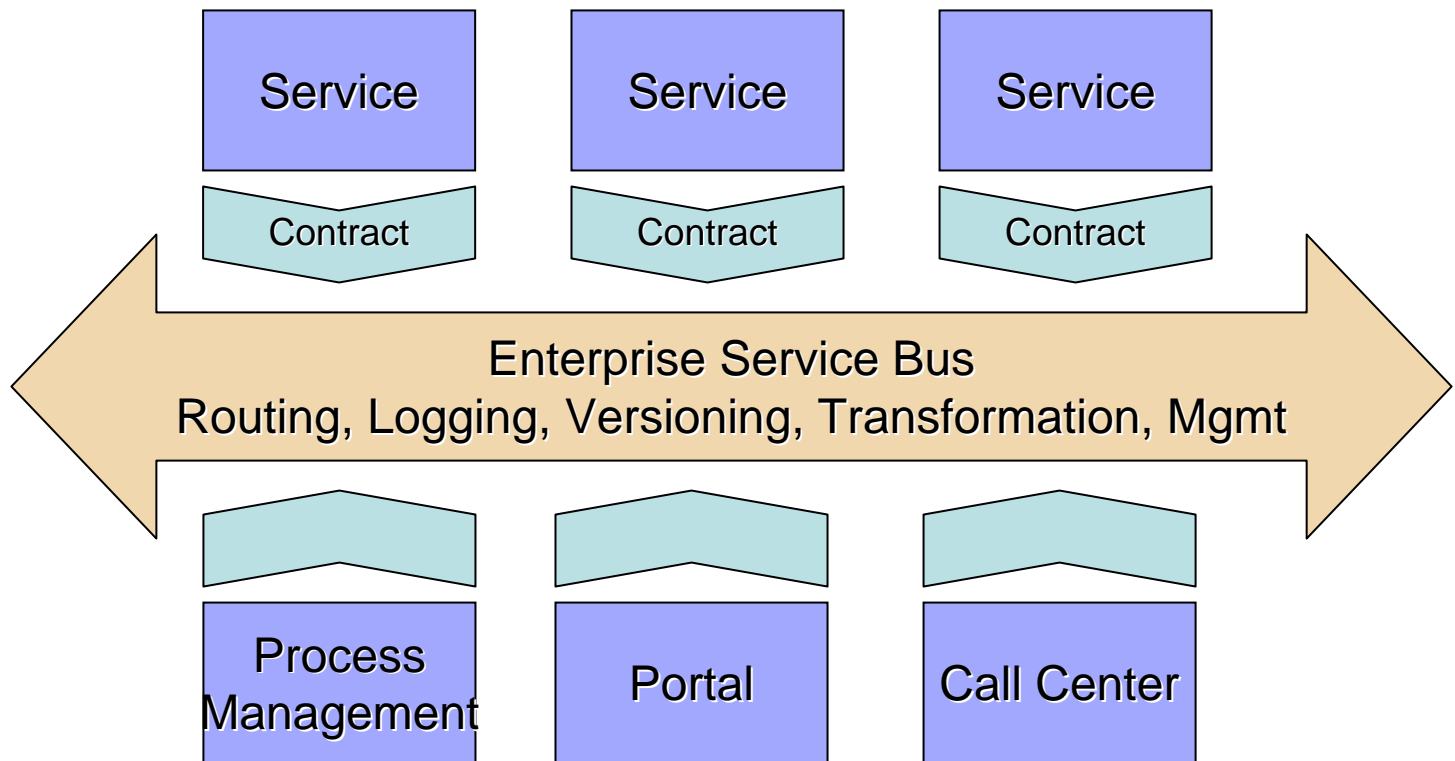


Enterprise Service Bus (ESB)

- A software architecture
 - A logical intermediary through which every message flows
 - Offers a policy based approach to decide what to do to each message or interaction
- The benefits of the gateway model
 - Without a physical hub and spoke
- Many vendors offer ESB products
 - Often a layer over an existing messaging framework

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ESB is the implementation of SOA





Pros and Cons

Pros

- Faster and cheaper accommodation of existing systems
- Increased flexibility: easier to change as requirements change
- Standards-based
- Scales to enterprise wide deployment
- Configuration rather than coding
- No central broker

Cons

- May end up with a proprietary solution
 - no common standards for the overall config and policies yet
- Requires more hardware to run
- New skills to learn to configure ESB
- Hard to get ROI on a small number of projects

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Service Registry

- A registry is a key component for SOA:
 - All services should be published
 - The registry should implement simple processes for staging and publishing services
 - Registry should also contain the policies applicable for each service
 - Without a centralized registry or federated set of registries you just have a SOA ball of yarn

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Don Rippert

CTO Accenture

- Four steps to SOA:
 - Use of eXtensible Markup Language (XML) to use application interfaces in a more standard way.
 - Taking some business processes and turning them into web services.
 - Introduction and full use of the enterprise service bus.
 - The generation of Business Process Execution Language(BPEL) - the ability through business processing modelling tools and BPEL to create different application behaviour without changing the software

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Anne Thomas Manes Analyst

- ...an ESB is not on my list if the few "basic components" that I recommend for getting started with SOA. Instead:
 - One or more service platforms (e.g., .NET, a Java EE app server, etc.)
 - An SOA management solution
 - A registry
 - An XML gateway if services will be exposed outside the firewall

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Summary

- Planning a good SOA infrastructure will return dividends
 - SOA requires careful:
 - Management
 - Versioning
 - Governance (coming up!)

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Resources

- http://www.infoworld.com/article/05/07/22/30FEesb_1.html
- http://blogs.sun.com/roller/page/rtenhove?entry=what_is_enterprise_service_bus
- ESB the book:
 - <http://www.amazon.co.uk/exec/obidos/ASIN/0596006756>

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